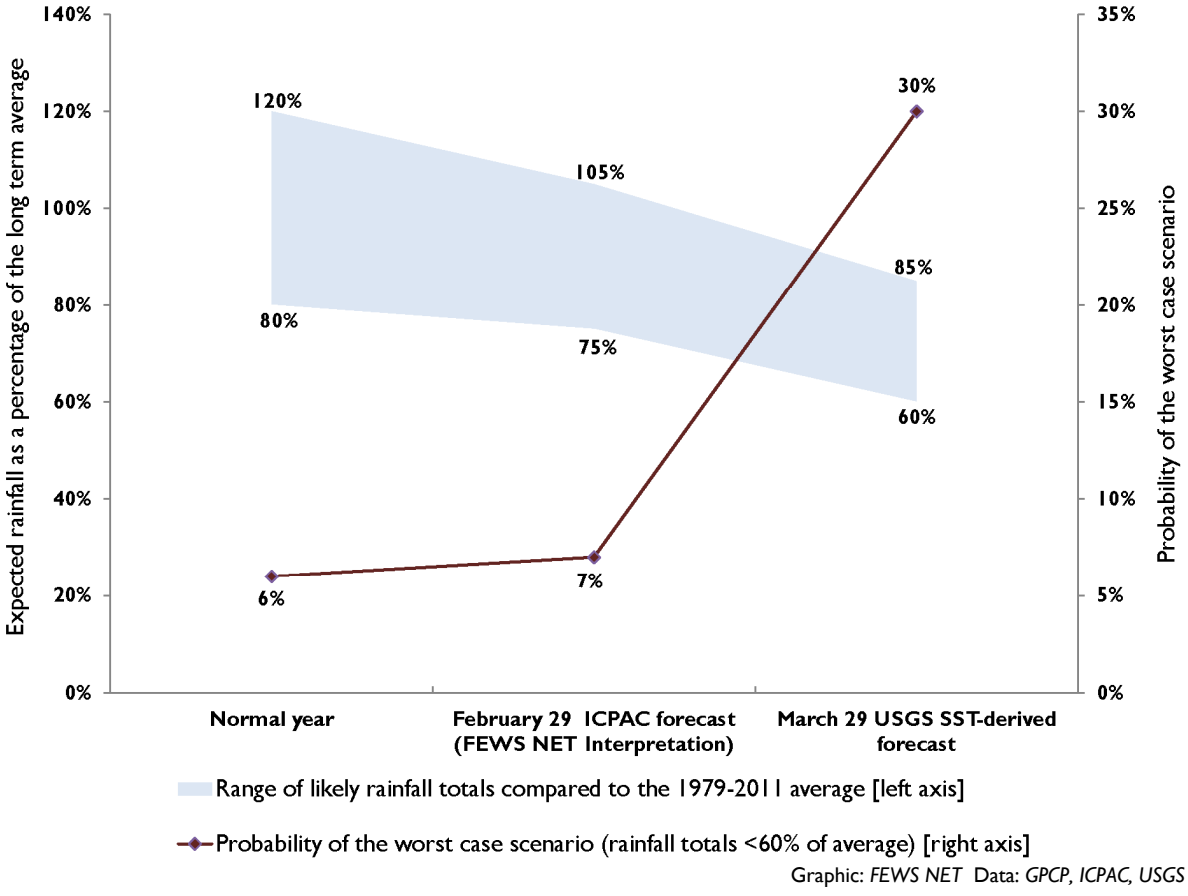
SPECIAL REPORT: East Africa April 3, 2012

Main season rainfall likely to be significantly below-average in the eastern Horn

Key Messages

- FEWS NET anticipates that the March-May season in the eastern Horn of Africa will perform poorly. Rainfall is expected to begin late, to be poorly distributed over space and time, and to total only ~60-85 percent of average. This is a significant deterioration compared to earlier forecast analysis (Figure 1) and would have significant impacts on crop production, pasture regeneration, and the replenishment of water resources.
- In the worst-case scenario, rainfall would be less than 60 percent of average, and would represent a major failure of the sub-region's main season, similar to seasonal performance in 2000 and 2011, two very dry years. There is a 30 percent chance of the worst case scenario.
- In either case, poor seasonal performance is likely to negatively affect food security in a region still recovering from an Emergency/Famine in 2011. An expansion in the size of the food insecure population and an increase in the severity of food insecurity is likely. A forthcoming alert will describe in more detail the likely food security impacts of this forecast.
- Given the impacts of extreme food insecurity and famine during 2011 on human health and household livelihoods, and the likelihood of a poor March-May season, humanitarian partners should immediately implement programs to protect livelihoods and household food consumption in the eastern Horn of Africa.

Figure 1. Evolution of March-May 2012 rainfall forecasts in the eastern Horn of Africa



Graphic: *FEWS NET* Data: *GPCP, ICPAC, USGS*

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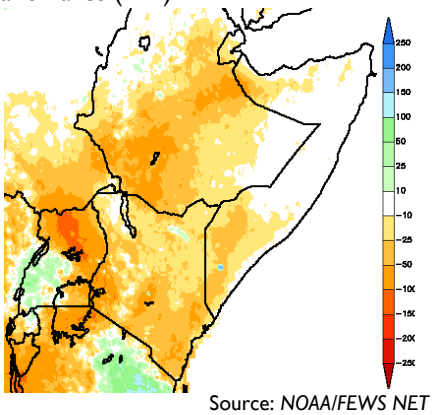
Context

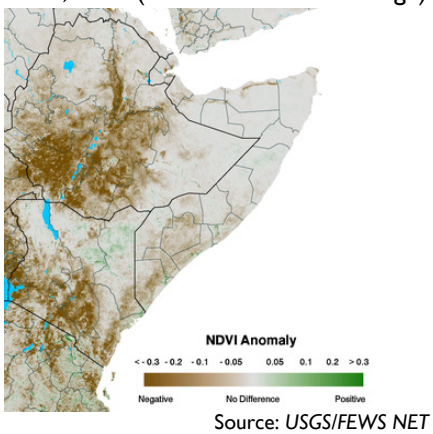
- June 2010 to May 2011 was one of the driest 12-month periods in the eastern Horn of Africa since 1950/51. This drought had substantial impacts on crop/livestock production, staple food prices, and food security. It was a major driving factor behind the 2011 Famine in southern Somalia.
- October-December rains are the minor season for pastoral and cropping areas of southern Ethiopia, Somalia, and northern Kenya and the major rains for southeast marginal cropping areas of Kenya. In 2011 these rains were excellent (>140 percent of average) across the entire eastern Horn, with the exception of southeast Kenya. This resulted in excellent harvests in southern Somalia and improved pastoral conditions across the sub-region.
- However, between January and March, temperatures were higher than average and March rainfall was very poor across large areas of Kenya and Ethiopia (Figure 2). As a result, though vegetation conditions remain better than last year, they are average to below average across the sub-region, despite the good October-December rains (Figure 3).
- The March to May season is the major rainfall period for pastoral and agricultural areas of northern Kenya, southern Ethiopia, and most of Somalia, accounting for 50-60 percent of annual rainfall in many parts of the sub-region. These rains are also critical for the secondary *Belg* season in Ethiopia.

Figure 2. March 1-30 rainfall anomalies (mm)



Source: *NOAA/FEWS NET*

Figure 3. Vegetation anomaly March 21-31, 2012 (2012 vs. 2001-11 average)

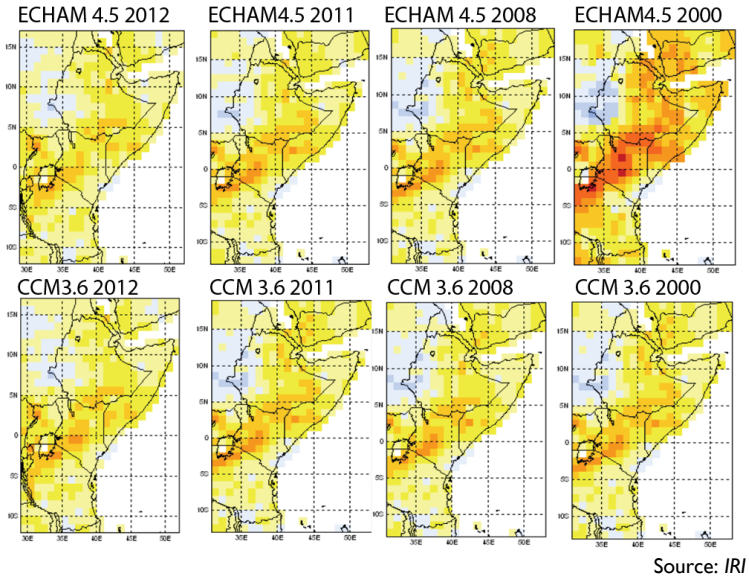


Source: *USGS/FEWS NET*

Forecasts and Supporting Evidence for March-May rainfall

- The regional consensus forecast, released by the IGAD Climate Prediction and Applications Centre (ICPAC) on February 29, suggests that March-May rainfall in the eastern Horn of Africa will be below-average to average. National forecasts from the Kenyan and Ethiopian meteorological agencies are similar, though the Kenyan forecast suggests even poorer rainfall in the northeast and southeast.
- The March forecast from the International Research Institute for Climate and Society (IRI) indicates an increased likelihood of below-average April-June rainfall across Somalia, southeast Ethiopia, and eastern Kenya. Additional modeling by IRI of April-May rainfall in the eastern Horn (using the ECHAM 4.5 and CCM3.6 global climate models) also suggests below-average precipitation. These model outputs are similar to those for April-May rainfall in 2000, 2008, and 2011 – all years of exceptionally poor rainfall (Figure 4).
- Recent analysis by USGS/FEWS NET suggests that the performance of Sea Surface Temperatures (SST) in the western/central Pacific and the Indian Ocean are key drivers of March-May rainfall in the eastern Horn of Africa. Based on this research, indices of SST behavior were developed. By comparing the indices for March 2012 with the indices for past years and historical rainfall data, an updated forecast was developed by USGS. This forecast suggests that March-May rainfall totals are likely to be 60-85 percent of average. The analysis also suggests a 30 percent probability of a failed season (rainfall less than 60 percent of average).

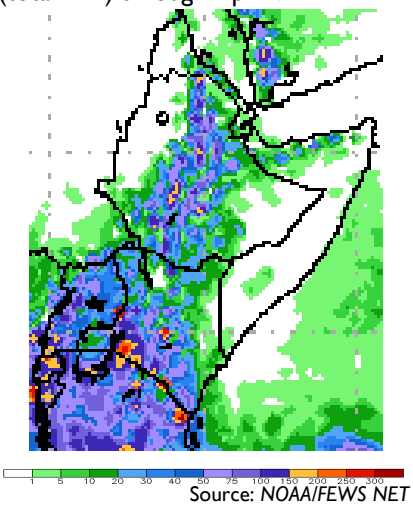
Figure 4. April/May 2012 IRI rainfall forecast model outputs compared to outputs for 2000, 2008, and 2011



Source: *IRI*

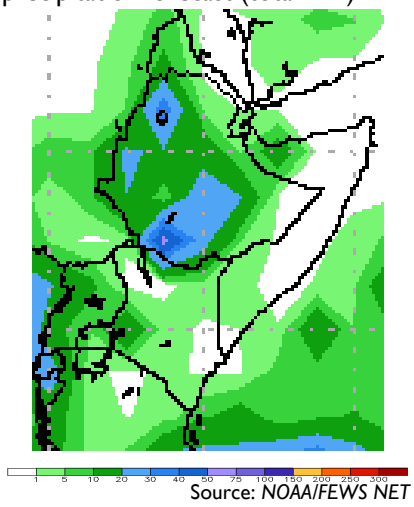
- Typically in the eastern Horn, significant rainfall (>10mm in a 10-day period) begins between the last ten days of March and the first ten days of April. As of April 3, light rainfall (up to 10-15mm) had been received in some areas though short-term forecasts by NOAA suggest rainfall in many areas of the sub-region will not exceed 10mm in the coming two weeks (Figures 5 and 6). Atmospheric conditions suggest that when rains do begin, they will be erratically distributed over time and space.

Figure 5. GFS precipitation forecast (total mm) through April 9



Source: *NOAA/FEWS NET*

Figure 6. April 9-16 GFS precipitation forecast (total mm)



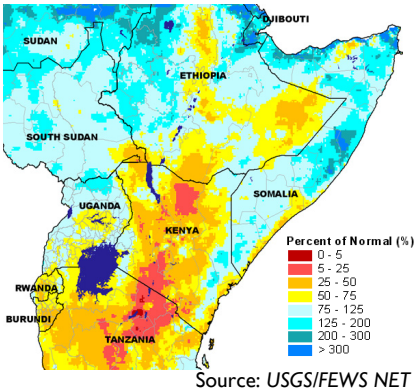
Source: *NOAA/FEWS NET*

FEWS NET Scenario Assumptions

- Based on the analyses presented above, FEWS NET has made the following assumptions with regard to March-May seasonal performance. These assumptions are based heavily on the recent USGS forecast.

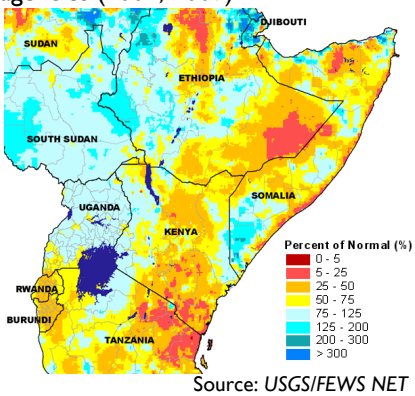
  - In the most-likely scenario, FEWS NET assumes that rainfall totals across the eastern Horn of Africa will be 60-85 percent of average. There is a 50 percent chance that rainfall will fall within this range. This is a significant deterioration compared to earlier forecast analysis (Figure 1). The onset of rainfall is expected to be delayed and rainfall is likely to be erratically distributed over time and space. An early cessation of rains is also possible.

Figure 7. Average rainfall performance during USGS-identified analogue years (2000, 2008, 2011)



Source: *USGS/FEWS NET*

Figure 8. Average rainfall performance during analogue years identified by national meteorological agencies (2001, 2009)



Source: *USGS/FEWS NET*

  - At a subnational level, an analysis of analogue years identified by USGS and national meteorological agencies suggests that north-central Kenya/south-central Ethiopia, south-central Kenya/northern Tanzania, eastern Somali region of Ethiopia/Hawd of Somalia, and Belg-producing areas of Ethiopia are areas of particular concern (Figures 7 and 8). This analysis also suggests that southern Somalia is relatively less at risk of a very poor season.

  - In the worst case scenario, FEWS NET assumes that rainfall will be <60 percent of average, similar to the March-May season in 2000 and 2011, two very dry years. There is a ~30 percent likelihood of rainfall this poor – a probability five times higher than normal.

- Rainfall deficits of the magnitude described in the most-likely scenario, in combination with erratic distribution, would have significant impacts on crop production, pasture regeneration, and the replenishment of water resources. The worst case scenario would represent a major failure of the sub-region's main season. In both cases, poor seasonal performance is likely to negatively affect food security in a region still recovering from Emergency and Famine level food insecurity.

- A forthcoming alert will describe in more detail the likely food security impacts of this forecast. However, given the impacts of extreme food insecurity and famine during 2011 on human health and household livelihoods, and the likelihood of a poor March-May season in the eastern Horn of Africa, humanitarian partners should immediately implement programs to protect livelihoods and household food consumption.